भारतीय मानक **IS 4883 : 2023**

Indian Standard

खोया — विशिष्टि

(दूसरा पुनरीक्षण)

Khoa — Specification

(Second Revision)

ICS 67.100.10

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February 2023 **Price Group 6**

Dairy Products and Equipment Sectional Committee, FAD 19

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

Khoa or *Mawa* or *Palghoa* refers to the milk product prepared by partial dehydration of milk by heating under controlled conditions. Buffalo's milk is usually preferred over cow's milk for *Khoa* production, since the former gives greater yield and a more desirable body and texture.

Khoa forms an important base for preparation of indigenous milk sweets such as *Burfi*, *Peda*, *Gulab Jamun* throughout India. *Khoa* making is one of the important methods adopted for conserving surplus milk.

During the process of *Khoa* production from milk, heat-coagulation of milk proteins, especially the whey proteins occurs and a characteristic cooked flavour appears. Further, the vigorous stirring of the hot mass exerts an appreciable homogenizing action, so that when the pat is formed, all the fat globules are entrained in the mass. The water is also dispersed as fine droplets in *Khoa*.

The colour of *Khoa* depends on the type of milk used, it is whitish from buffalo's milk and yellowish from cow's milk. There may be a tinge of brown in the product.

This standard was first published in 1968 and subsequently revised in 1980 keeping in view the latest technological advances and product development to include definitions and limits for different types of *Khoa*; revise limits for fat and incorporate new requirements for titratable acidity, total solids, total ash, coliform and yeast and mould counts.

This revision has been brought out to incorporate the following major changes:

a) Definition of *Khoa* has been updated;
b) Minimum fat content requirement has been relaxed;
c) Test methods have been updated; and
d) Microbiological requirements have been modified.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the Rules and Regulations framed thereunder and the *Legal Metrology (Packaged Commodities) Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the committee responsible for formulation of the standard is listed in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
KHOA — SPECIFICATION
(Second Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for *Khoa*.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definition shall apply.

3.1 ***Khoa*** — shall be heat-coagulated milk-product obtained by partial dehydration from any variant of milk (*see* **4** of IS 13688) with or without added milk solids.

4 TYPES

4.1 *Khoa* shall be of following types based on the physical characteristics:

4.1.1 *Pindi*

It is characterized as a circular ball of a hemispherical pat with smooth and homogeneous body and texture. The product shall be free from burnt particles as well as from any browning defects. The product should possess characteristic cooked flavour and also should be free from objectionable odour and sour (acidic) taste.

4.1.2 *Danedaar*

It is characterized by its granular texture and uneven body. The size of grains depends upon the amount of coagulant added and the quality of milk used. This type of *Khoa* is used as a base for the preparation of *Kalakand*, cakes and pastries where granulation is valued to a great extent.

4.1.3 *Dhap (Katccha Mawa)*

It is characterized by loose and sticky body and smooth texture. It contains less than 60 percent by mass of total solids and higher moisture content than *Pindi* and *Danedar* types. *Dhap* is preferred for the preparation of *Gulab Jamun* as it forms uniform balls with desired rheological qualities after frying and soaking in sugar syrup.

5 REQUIREMENTS

5.1 Only fresh, sweet, clean milk, free from colostrum, and in every way fit for human consumption shall be used. The milk shall be free from adulterants, preservatives and any matter foreign to milk when tested as per IS 1479 Part 1.

5.2 Appearance and Colour

Khoa shall be free from signs of free fat, water seepage, and mouldiness. The colour of *Khoa* shall be white to pale yellow, may be with a tinge of brown.

5.3 Odour and Flavour

The *Khoa* shall have its characteristic flavour. It shall be free from objectionable flavours and odours.

5.4 Texture and Consistency

The *Khoa* shall conform to its type and designation. It shall have uniform texture and consistency. The surface of *Khoa* should not appear ‘dry’ and nor should it be sandy.

5.5 The product shall be manufactured and packed in equipment and premises maintained under hygienic conditions (*see* IS 2491). It shall also be stored and distributed under hygienic conditions.

5.6 The product shall also comply with the requirements specified in Table 1 and Table 2.

Table 1 Requirements for *Khoa*
(*Clause* 5.6)

Sl No.	Characteristic	Requirement for Type			Method of Test, Ref to
		Pindi	*Danedar*	*Dhaap*	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Total solids, percent by mass, *Min*	65	60	55	IS 11622
ii)	Fat, percent by mass (on dry basis), *Min*	34	34	34	IS 12758
iii)	Total ash, percent by mass (on dry basis), *Max*	6.0	6.0	6.0	Annex A of IS 1165
iv)	Titratable acidity (as lactic acid), percent by mass, *Max*	0.60	0.70	0.50	Annex B

Table 2 Microbiological Requirements for *Khoa*
(*Clause* 5.6)

Sl No.	Characteristic	Requirement				Method of Test, Ref to
		Sampling Plan		Limit (cfu)		
		n	c	m	M	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Aerobic plate count	5	3	2.5 x 10^4/g	7.5 x 10^4/g	IS 5402 (Part 1* or Part 2)
ii)	Coliform count	5	2	50/g	1 × 10^2/g	IS 5401 (Part 1)
iii)	*Staphylococcus aureus* (Coagulase positive)	5	3	10/g	1 × 10^2/g	IS 5887 (Part 8/ Sec 1* or Sec 2)
iv)	Yeast and mould count	5	3	10/g	50 /g	IS 16069 (Part 1)
v)	Escherichia coli	5	0	<10/g	–	IS 5887 (Part 1)
v)	*Salmonella* sp.	5	0	Absent/ 25 g	–	IS 5887 (Part 3/ Sec 1)
vi)	*Listeria monocytogenes*	5	0	Absent/g	–	IS 14988 (Part 1)

NOTES

1 For sampling plan, *see* Annex C.

2 In case of dispute, the method indicated by '*' shall be the referee method.

3 The requirement for *Salmonella* shall be tested in a laboratory situated away from the production area.

5.7 The heavy metals, pesticide residues, antibiotic and veterinary drug residues, toxic substances (melamine) and other contaminants, if any, in the raw materials used in the manufacture of the product shall not exceed the limits as prescribed in the *Food Safety and Standards (Contaminants, Toxins and Residues) Regulations*, 2011.

6 PACKING AND MARKING

6.1 Packing

All the material used for wrapping or packaging the *Khoa* shall be food grade and of such a nature as to impart no off-flavour or odour, nor in any other way contaminate the product packed under normal conditions of manufacture, storage and use.

6.2 Marking

The following information shall be marked legibly and indelibly on each container:

a) Name and type of the product;
b) List of the ingredients in the descending order;
c) Name and address of the manufacturer;
d) Batch or code number;
e) Month and year of manufacturing or packing;
f) Net quantity;
g) Direction for storage;
h) Expiry/use by (date, month and year); and
j) Any other requirements under the *Food Safety and Standards (Labelling and Display) Regulations*, 2020 and the *Legal Metrology Act*, 2009 and rules framed thereunder.

6.2.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 SAMPLING

The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in IS 11546 except that stainless steel knife with a sharp pointed blade shall be used for taking the samples.

8 QUALITY OF REAGENTS

Unless specified otherwise pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE —'Pure chemical' shall mean chemicals that do not contain impurities which effect the test results.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 1070 : 1992	Reagent grade water — Specification (*third revision*)
IS 1165 : 2022	Milk powder — Specification (*sixth revision*)
IS 1479 (Part 1) : 2016	Methods of test for dairy industry: Part 1 Rapid examination of milk (*first revision*)
IS 2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
IS 5401 (Part 1) : 2012/ISO 4832 : 2006	Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms: Part 1 Colony count technique (*second revision*)
IS 5402	Microbiology of the food chain — Horizontal method for the enumeration of microorganisms
(Part 1) : 2021/ISO 4833-1: 2013	Colony count at 30 °C by the pour plate technique (*third revision*);
(Part 2) : 2021/ISO 4833-2: 2013	Colony count at 30 °C by the surface plating technique (*third revision*)
IS 5887	Methods for detection of bacteria responsible for food poisoning
(Part 1) : 1976	Isolation, identification and enumeration of *Escherichia coli* (*first revision*);
(Part 3/Sec 1) : 2020/ISO 6579-1 : 2017	Horizontal method for the detection, enumeration and serotyping of *Salmonella*, Section 1 Detection of *Salmonella* spp. (*third revision*);
(Part 8/Sec 1) : 2002/ISO 6888-1: 1999	Horizontal method for enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and Other Species), Section 1 Technique using Baird-Parker agar medium;
(Part 8/Sec 2) : 2002/ISO 6888-2 : 1999	Horizontal method for enumeration of coagulase — positive (*Staphylococcus aureus* and Other Species), Section 2 Technique using rabbit plasma fibrinogen agar medium
IS 11546 : 2012/ISO 707 : 2008	Milk and milk products — Guidance on sampling (*second revision*)
IS 11622 : 1986	Method for determination of total solids content in condensed milk
IS 12758 : 2005/ISO 1735 : 2004	Cheese and processed cheese products — Determination of fat content — Gravimetric method (reference method) (*first revision*)
IS 13688 : 2020	Packaged pasteurized milk — Specification (*second revision*)
IS 14988 (Part 1) : 2020/ISO 11290-1 : 2017	Microbiology of the food chain — Horizontal method for detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp.: Part 1 Detection method (*first revision*)
IS 16069 (Part 1) : 2013/ISO 21527-1 : 2008	Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds: Part 1 Colony count technique in products with water activity greater than 0.95

ANNEX B

[*Table* 1, *Item* (iv)]

DETERMINATION OF TITRATABLE ACIDITY

B-1 REAGENTS

B-1.1 Standard Sodium Hydroxide Solution — 0.1 N.

B-1.2 Standard Hydrochloric Acid — 0.1 N.

B-1.3 Phenolphthalein Indicator Solution — 0.5 percent in 50 percent ethyl alcohol.

B-2 PROCEDURE

B-2.1 Direct Method

Weigh accurately about 2 g of *Khoa* in a porcelain dish. Add 3 ml of hot water and render into a fine paste using a pestle and mortar. Dilute by further adding 17 ml hot water, washing off any adherents from the pestle.

B-2.1.1 Add 1 ml of phenolphthalein indicator solution and titrate against standard sodium hydroxide solution. Stir vigorously throughout. The persistence of a slight pinkish tinge for 30 seconds indicates the end point.

B-2.1.2 Calculation

Titratable acidity (as lactic acid), percent by mass =

$$\frac{9 \times AN}{M}$$

where

A = volume in ml, of standard sodium hydroxide required for titration;

N = normality of standard sodium hydroxide solution; and

M = mass in g, of the material taken for the test.

B-2.2 Indirect Method

Proceed as in **B-2.1**. Add 10 ml of standard sodium hydroxide solution to the diluted product and after adding 1 ml of phenolphthalein indicator solution, titrate against standard hydrochloric acid. Stir vigorously throughout. The end point is indicated when the pink colour disappears completely.

B-2.2.1 Calculation

Titratable acidity (as lactic acid), percent

$$\text{by mass} = \frac{(10-V)}{M} \times 0.9$$

where

V = normality of standard hydrochloric acid; and

M = mass in g, of the material taken for the test.

ANNEX C

(*Table* 2)

SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

C–1 SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

The terms *n*, *c*, *m* and *M* used in this standard have the following meaning:

n = number of units comprising a sample;
c = maximum allowable number of units having microbiological counts above *m* for 2-class sampling plan and between *m* and *M* for 3-class sampling plan;
m = microbiological limit that separates unsatisfactory from satisfactory in a 2-class sampling plan or acceptable from satisfactory in a 3-class sampling plan; and
M = microbiological limit that separates unsatisfactory from satisfactory in a 3-class sampling plan.

C-2 INTERPRETATION OF RESULTS

2-Class Sampling Plan (*where n, c and m are specified*)	*3-Class Sampling Plan* (*where n, c, m and M are specified*)
1) Satisfactory, if all the values observed are ≤ *m*	1) Satisfactory, if all the values observed are ≤ *m*
2) Unsatisfactory, if one or more of the values observed are > *m* or more than *c* values are > *m*	2) Acceptable, if a maximum of c values are between *m* and *M* and the rest of the values are observed as ≤ *m*
	3) Unsatisfactory, if one or more of the values observed are > *M* or more than c values are > *m*

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Dairy Products and Equipment Sectional Committee, FAD 19

Organization	*Representative(s)*
National Dairy Research Institute, Karnal	Dr Dheer Singh (***Chairperson***) Dr Manmohan Singh Chauhan (***Former Chairperson***)
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